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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,031

05/30/2006

Akio Iwasa

2006\_0810A

5998

513 7590 04/16/2007  
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EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3744

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/16/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/581,031

Applicant(s)

IWASA ET AL.

Examiner

Tho v. Duong

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/30/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroyanagi et al (US 6,272,881). Kuroyanagi discloses (figures 1 and 11) a heat exchanger comprising a plurality of tubes (2) disposed so as to distribute a coolant along a to-bottom direction over two rows to the front and rear along the direction of airflow; a first upper tank (10) communicating with the upper end of a group of tubes disposed in one of the tube rows; a second upper tank portion (11) communicating with the upper end of a group of tubes disposed in the other tube row; a first lower tank portion (9) communicating with the lower end of the group of tube; a second lower tank (12) communicating with the lower end of the group disposed in the other tube row; a communicating passage that communicates between one end of the first upper tank portion and one end of the second upper end tank portion; a partition means (14,15) for partition the first upper portion and the second upper tank portion at substantial centers thereof; an inflow port (6) communicating with the other end of the first upper tank, through which coolant from an outside source flows in; and an outflow port (7) communicating with the other end of the second upper tank portion, through which coolant flows out to the outside (compressor). Kuroyanagi further discloses (figure 11) that the inlet port (6) is set smaller than an opening area at the outlet port.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyanagi in view of Farry, Jr. et al.(US 5,409,056). Kuroyanagi substantially discloses all of applicant's claimed invention as discussed above except for the limitation that the inlet port opening is located higher than the outlet port. Farry discloses (figure 1) a plate evaporator that has the inlet opening (28) located higher than the outlet opening (30) for a purpose of further moving the refrigerant from the inlet to the outlet under force of gravity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Farry's teaching for a purpose of further moving the refrigerant from the inlet to the outlet under force of gravity.

Claims 3,5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyanagi and/or Farry as applied to claims 1 and 2 above, and further in view of Yamauchi et al. (US 4,821,531). Kuroyanagi and/or Farry substantially disclose all of applicant's claimed invention as discussed above except for the limitation that the opening area of the inlet is within a range of 25-65 mm<sup>2</sup>. Yamauchi discloses (figures 2, 29-32 and column 10, lines 16-23) a plate evaporator that has an inlet port opening area of 7mm in diameter ( $2 \cdot \pi \cdot R^2 = 38 \text{ mm}^2$ ), which is well within the claimed range, for a purpose of minimizing temperature deviation of air and the flowing loss of the refrigerant. It would have been obvious to one having ordinary skill in

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the art at the time the invention was made to use Yamauchi's teaching in the device of Kuroyanagi or in the combination device of Kuroyanagi and Farry for a purpose of minimizing temperature deviation of air and the flowing loss of the refrigerant.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Narahara et al. (US 6,321,562) discloses an evaporator of automobile air conditioner with smaller input port.

Koga (US 6,230,787) discloses a stack type evaporator.

Kajikawa et al. (US 5,735,343) discloses a refrigerant evaporator.

Falta (US 6,216,773) discloses a plate type heat exchange.

Shimoya et al. (US 5,826,648) discloses a laminated type heat exchanger.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Tho v Duong  
Primary Examiner  
Art Unit 3744



TD  
April 9, 2007